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REFERENCE SERIES SUBWOOFERS

RW6
subwoofer kit

WELCOME
Thank you for buying a DLS REFERENCE subwoofer.
The subwoofer must be installed correctly in order to work well. This manual will show you how to install it like a pro. Please read the entire manual before beginning the installation.
Install the subwoofer yourself if you feel confident with our instructions and if you have the proper tools. However if you feel unsure, turn over the installation job to someone better suited to it.
The speakers are designed for use in vented enclosures. They are NOT suitable for open air, or door mount. Do not use them as mid bass drivers in the door, they are mainly designed for subwoofer use.

CONNECTION OF SUBWOOFER
The connection depends on what type of amplifier you use. The best is to follow the instructions given in the manual for the amplifier. Most amplifiers today have built-in lowpass crossover and possibilities to connect your subwoofer in bridge mode.
If you have a 2 ohm stable amplifier we advice you to connect the speakers in stereo mode.
If you have a 1 ohm stable amplifier like the DLS Ultimate amplifiers, it´s possible to connect two 4 ohm subs parallel in bridge mode.
If you use a DLS mono amplifier like A6, RA10, CAD11, CAD15 or CA12, you can also connect both speakers in parallel at a 2 ohm load.
We also recommend the use of a subsonic highpass filter. This gives a better bass reproduction with less "rumble". In most DLS amplifiers this feature is already built-in.
For wiring use high class speaker wires, min AWG13 (2.5 mm^2). For example **DLS SC 2x2,5.**

SUBWOOFER ENCLOSURES, GENERAL
Build your enclosure in a stable and airtight material. The best is 19 mm MDF-board. Larger enclosures must have bracing inside to avoid vibrations. The enclosure must be completely airtight. Use sealing compound in all joints, also around the cable terminals. The size of the enclosure is decided by the speaker data.

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VENTED ENCLOSURES
In a vented enclosure the sound from the speaker and the port work together creating a higher sound level. The best result is achieved if the port is mounted on the front of the speaker box. Second best is to mount the port on the side of the enclosure. In the examples for this subwoofer we advice you to mount the port on the right side of the enclosure.
The size of the vehicle often decides the practical size of the enclosure. A smaller enclosure has a higher resonant frequency than the larger one. The size of the enclosure should not be so big that the speaker plays below it´s own free air resonance (Fs), then it looses in power handling capacity.
We advice you to follow the examples in this manual when designing an enclosure. These enclosures have been tested by DLS together with the RW6 drivers.

BANDPASS ENCLOSURES
In all bandpass enclosures the speakers are hidden inside the enclosure, all sound is coming out through the ports. There are different types of bandpass enclosures and they have in common that they are a bit more difficult to build.
A suitable example of a band pass enclosure is found on the back side of this paper.

TECHNICAL SPECIFICATIONS RW6

Size	16,5 cm (6,5")
Impedance Z	4 ohm
Nom.power (RMS)	100 W
Maximum power	200 W
Frequency range	30 Hz - 4 kHz
Sensitivity	86,1 dB (1 W/1m)
SD	135 cm^2
Fs	47 Hz
Qts	0,45
Vas	12,2 liters
Cone material	Aluminium
Magnet, diameter	110mm (4,33")
Installation depth	84 mm (3,3")
Mounting hole	140 mm (5,5")
Outer diameter	165 mm (6,5")
Weight	2 kg (4,6 lb)

RUNNING-IN PERIOD
Allow the speaker to play for at least 15-20 hours.
After this time the performance is correct.

WARRANTY SERVICE
This speaker is covered by warranty, depending on the conditions in the country where it is sold. If the speaker is returned for service, please include the original dated receipt with the product.

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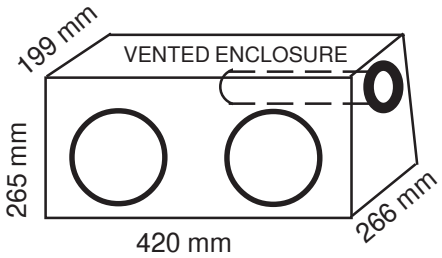
RECOMMENDED SUBWOOFER ENCLOSURES FOR RW6

VENTED ENCLOSURE WITH TWO RW6

This is the enclosure we recommend you to build and use for the two drivers in this kit. It 's carefully tested and found to be the best choise. The port to be used is included with the kit. The tube is cut to it's correct length and should not be changed. There are two ports coming with this kit. The larger one is for mount on the outside, and the smaller one should be attached to the tube inside the enclosure.
Make a round hole in the box where you want to mount the bass port. Mounting hole for the port is 115 mm
The larger flange should be mounted in the box. Fasten it to the box with screws or with some glue. There are prepared drill holes on the back of the flange.
The smaller flange is for the inner end of the tube. Use a PVC-glue to fasten it on the tube.
Then glue the tube to the port mounted in the box.
Use sealing compound round the flange to make the box as airtight as possible.
The given enclosure volume is the inner volume.



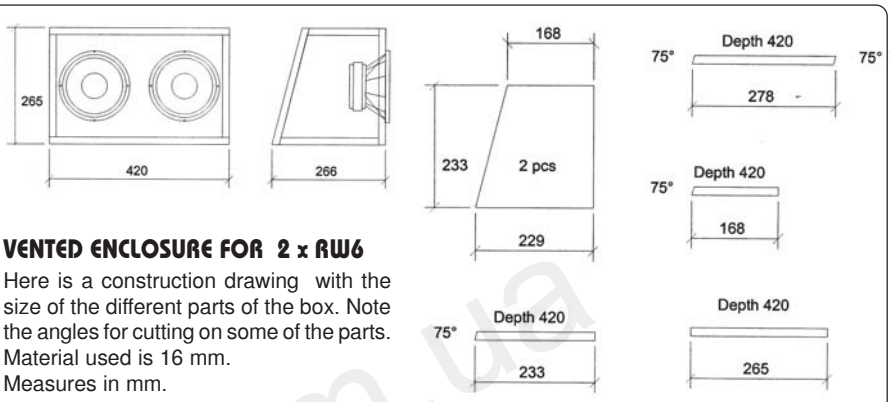
F3 = approximative lower frequency for vented boxes in Hz. Often called F-3 dB point = the point where the power is 50% lower.
Fb = Box resonant frequency

Enclosure for 2 x RW6:

Wiring	: Parallel
Volume	: 18 / 0,635 (liter / ft³)
Port	: 3"(6,8 cm) x 24 cm/ 9,5"
Damping	: Line inside
F3	: 52,2 Hz
Fb	: 46 Hz

Outer dimensions for a vented box:

Width	: 420 mm (16,5")
Height	: 265 mm (10,4")
Lower depth	: 266 mm (10,5")
Upper depth	: 199 mm (7,83")
Material	: MDF 16 mm (0,63")



VENTED ENCLOSURE FOR 2 x RW6

Here is a construction drawing with the size of the different parts of the box. Note the angles for cutting on some of the parts.
Material used is 16 mm.
Measures in mm.

VENTED ENCLOSURE FOR ONE RW6

This is a suitable enclosure if you want to use only a single RW6 driver in a vented box.
The given volume is the inner volume.

Enclosure for 1 x RW6:

Volume	: 9 / 0,32 (liter / ft³)
Port	: 2"(5 cm) x 24 cm/ 9,5"
Damping	: Line inside
F3	: 51,9 Hz
Fb	: 50 Hz

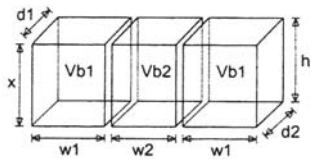
VENTED ENCLOSURE FOR 4 x RW6

This is a suitable enclosure if you want to use four (4) RW6 drivers in a vented box.
The given volume is the inner volume.

Enclosure for 4 x RW6:

Volume	: 37 / 1,3 (liter / ft³)
Port	: 4"(5 cm) x 25 cm/ 10"
Damping	: Line inside
F3	: 52,2 Hz
Fb	: 46 Hz

SEALED BANDPASS ENCLOSURE WITH 2 x RW6



The speakers are installed in Vb1 playing into chamber Vb2 where the ports are installed. The ports must be pulled out of the box 4" (10 cm) to allow the air to pass.

Bandpass enclosure for 2 x RW6:

Wiring	: Parallel
Vb1 volume	: 2 x 8,7 / 0,31 (liter / ft³)
Vb2 volume	:14,8 / 0,52 (liter / ft³)
Ports in Vb2	: 2 x 3"(6,8 cm) x 25 cm/ 10"
Damping	: Damping mat
F3 Vb1	: 49,3 Hz
F3 Vb2	: 98,5 Hz
Fb Vb1	: 72,6 Hz
Fb Vb2	: 70 Hz

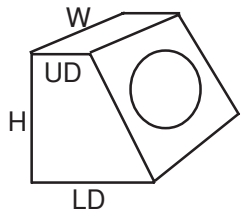
h	= 25 cm*	
w1	= 13,92 cm*	
w2	= 23,71 cm*	*These are inside measures
d1	= 25 cm*	
d2	= 25 cm*	
x	= 25 cm*	

CALCULATE YOUR OWN ENCLOSURE

Box volumes:
When calculating the volume of an enclosure you simply multiply the width (W) x heigth (H) x depth (D).
Use measures in dm and you will get the answer in liters.

A trapezoid box is calculated like this:

$$\text{Vol} = \text{width (W)} \times \text{heigth (H)} \times \frac{\text{upper depth (UD)} + \text{lower depth (LD)}}{2}$$



Be sure to use the inside measures to get the correct volume. The outside measures depends on the material you use for the box

Some useful measure conversions

1 yard (yd) = 3 ft = 36 in = 0,9144 m
1 foot (ft) = 0,3048 m
1 inch (in) = 2,54 cm
1 cubic foot (ft³) = 1728 in³ = 28,32 dm³

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